



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

3

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,542	02/20/2004	Hanspeter Pfister	MERL-1538	7438
22199	7590	12/20/2007		
MITSUBISHI ELECTRIC RESEARCH LABORATORIES, INC. 201 BROADWAY 8TH FLOOR CAMBRIDGE, MA 02139			EXAMINER ANYIKIRE, CHIKAODILI E	
			ART UNIT 2621	PAPER NUMBER
			MAIL DATE 12/20/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,542	<b>Applicant(s)</b> PFISTER ET AL.	
	<b>Examiner</b> Chikaodili E. Anyikire	<b>Art Unit</b> 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This application is responsive to application number (10783542) filed on October 15, 2007. Claims 1-29 are pending and have been examined.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8 and 9 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 8 and 9 discloses passive and active display elements. A rejection has been given for the examiner's best understanding of these claims.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-24 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ritchey (US 5,495,576).

As per **claim 1**, Ritchey discloses a three-dimensional television system, comprising:

an acquisition stage, comprising:

a plurality of video cameras (Fig 17, 6a-6f), each video camera configured to acquire a video of a dynamically changing scene in real-time (Col 10 Ln 1-9 and Col 26 Ln 62-66); means for synchronizing the plurality of video cameras (Col 11 Ln 49-54); and

a plurality of producer modules (Fig 17, 15a-15f) connected to the plurality of video cameras (Col 26 Ln 9-19), the producers modules configured to compress the videos to compressed videos and to determine viewing parameters of the plurality of video cameras (Fig 17, 6a-6f; Col 26 Ln 4-9);

a display stage, comprising:

a plurality of decoder modules (Fig 17, 72a-f) configured to decompress the compressed videos to uncompressed videos (Col 21 Ln 49-52);

a plurality of consumer modules (Fig 17, 72a-f) configured to generate a plurality of output videos from the decompressed videos (Col 21 Ln 49-52);

a controller (Fig 17, 9) configured to broadcast the viewing parameters to the plurality of decoder modules and the plurality of consumer modules (Col 21 Ln 47-49 and 59-67; the controller takes the video signals and information that correspond to view parameters);

a three-dimensional display unit (Fig 17, 12) configured to concurrently display the output videos according to the viewing parameters (Col 22 Ln 45-47); and

means of connecting (Fig 17, 80a-80f) the plurality of decoder modules (Fig 17, 72a-f), the plurality of consumer modules (Fig 17, 72a-f), and the plurality of display units (Fig 17, 70-70f); and

a transmission stage,

connecting the acquisition stage to the display stage, configured to transport the plurality of compressed videos and the viewing parameters (Col 32 Ln 23-33).

As per **claim 2**, Ritchey discloses the system of claim 1, further comprising a plurality of cameras to acquire calibration images (Col 11 Ln 55-65 and Col 12 Ln 3-9) displayed on the three-dimensional display unit to determine the viewing parameters (Col 20 Ln 46-56).

As per **claim 3**, Ritchey discloses the system of claim 1, in which the display units are projectors (Col 30 Ln 4-10).

As per **claim 5**, Ritchey discloses the system of claim 1, in which the three-dimensional display unit uses front-projection (Col 31 Ln 67 – Col 32 Ln 2).

As per **claim 6**, Ritchey discloses the system of claim 1, in which the three-dimensional display unit uses rear-projection (Col 35 Ln 3-7).

As per **claim 7**, Ritchey discloses the system of claim 1, in which the display unit uses two-dimensional display element (Col 35 Ln 3-7).

As per **claim 8**, Ritchey discloses the system of claim 1, in which the display unit is flexible, and further comprising passive display elements (Col 35 Ln 3-10).

As per **claim 9**, Ritchey discloses the system of claim 1, in which the display unit is flexible, and further comprising active display elements (Col 35 Ln 11-16).

As per **claim 10**, Ritchey discloses the system of claim 1, in which different output images are displayed depending on a viewing direction of a viewer (Col 22 Ln 58-67 and Col 28 Ln 31-37).

As per **claim 11**, Ritchey discloses the system of claim 1, in which static view-dependent images of an environment are displayed such that a display surface disappears (Col 30 Ln 38-51).

As per **claim 12**, Ritchey discloses the system of claim 1, in which dynamic view-dependent images of an environment are displayed such that a display surface disappears (Col 30 Ln 38-51).

As per **claim 13**, Ritchey discloses the system of claim 11 or 12, in which the view-dependent images of the environment are acquired by a plurality of cameras (Col 10 Ln 1-9 and Col 26 Ln 62-66).

As per **claim 14**, Ritchey discloses the system of claim 1, in which each producer module (Fig 17, 15a) is connected to a subset of the plurality of video cameras (Fig 17, 6a; Col 26 Ln 9-19).

As per **claim 15**, Ritchey discloses the system of claim 1, in which the plurality of video cameras (Fig 17, 6a-6f) are in a regularly spaced linear and horizontal array (Col 10 Ln 32-34 and Col 11 Ln 66-67).

As per **claim 16**, Ritchey discloses the system of claim 1, in which the plurality of video cameras (Fig 17, 6a-6f) are arranged arbitrarily (Col 10 Ln 38-41 and Col 11 Ln 66-67).

As per **claim 17**, Ritchey discloses the system of claim 1, in which an optical axis of each video camera is perpendicular to a common plane, and the up vectors of the plurality of video cameras are vertically aligned (Col 12 Ln 44-47).

As per **claim 18**, Ritchey discloses the system of claim 1, in which the viewing parameters include intrinsic and extrinsic parameters of the video cameras (Col 11 Ln 55-63 and Col 12 Ln 3-11).

As per **claim 19**, Ritchey discloses the system of claim 1, further comprising: means for selecting a subset of the plurality of cameras for acquiring a subset of videos (Col 20 Ln 46-50).

As per **claim 20**, Ritchey discloses the system of claim 1, in which each video is compressed individually and temporally (Col 26 Ln 4-25).

As per **claim 21**, Ritchey discloses the system of claim 1, in which the viewing parameters include a position, orientation, field-of-view, and focal plane, of each video camera (Col 10 Ln 9-16, Col 11 Ln 55-61, and Col 12 Ln 1-9).

As per **claim 22**, Ritchey discloses the system of claim 1, in which the controller determines, for each output pixel  $o(u, v)$  in the output video, a view number  $v$  and a position of each source pixel  $s(v, x, y)$  in the decompressed videos that contributes to the output pixel in the output video (Col 15 Ln 7-15 and Col 17 Ln 4-30; the prior art

addresses input values using a look-up table, which consist of weights, to find output pixel values).

As per **claim 23**, refer to the rejection of claim 22 and also the output pixel values are fundamentally a linear combination of source (input) pixel values.

As per **claim 24**, Ritchey discloses the system of claim 22, in which a block of the source pixels contribute to each output pixel (Col 15 Ln 7-15 and Col 17 Ln 4-30; the prior art discloses frames, which are blocks of pixels).

As per **claim 27**, Ritchey discloses the system of claim 1, in which an arrangement of the cameras (Fig 17, 6a-6f) and an arrangement of the display units (Fig 17, 70a-70f), with respect to the display unit, are substantially identical (Col 21 Ln 33-37).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.



4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Ritchey (US 5,495,576).

As per **claim 4**, Ritchey discloses the system of claim 1.

However, Ritchey does not teach in which the display units are organic light emitting diodes.

In the same field of endeavor, organic light emitting diodes are well-known and would have been obvious to use as a display unit as stated by the applicant in background of the instant application. The examiner takes official notice.

8. Claims 25 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Ritchey (US 5,495,576) in view of Ezzra et al (US 5,703,717).

As per **claim 25**, Ritchey discloses the system of claim 1.

However, Ritchey does not explicitly teach in which the three-dimensional display unit includes a display-side lenticular sheet, a viewer-side lenticular sheet, a diffuser, and substrate between each lenticular sheets and the diffuser.

In the same field of endeavor, in which the three-dimensional display unit includes a display-side lenticular sheet (Fig 4, 34), a viewer-side lenticular sheet (Fig 4, 36), a diffuser (Fig 3, 35), and substrate between each lenticular sheets and the diffuser

(Col 4 Ln 11-31; the prior art discloses that the lenticular screens have substrates on them to bond to the diffuser).

Therefore, it would have been obvious at the time of the invention to modify the invention of Ritchey with that of Ezzra. The advantage would have been to increase that separation of the 2D views at the observer and a reasonable angular spread is obtained (Col 4 Ln 26-30).

As per **claim 26**, Ritchey discloses the system of claim 1.

However, Ritchey does not explicitly teach in which the three-dimensional display unit includes a display-side lenticular sheet, a reflector, and a substrate between the lenticular sheets and the reflector.

In the same field of endeavor, Ezzra et al teach in which the three-dimensional display unit includes a display-side lenticular sheet (Fig 4, 34), a reflector (Fig 4, 35; diffusion plate can act as a reflector), and a substrate between the lenticular sheets and the reflector (Col 4 Ln 11-31; the prior art discloses that the lenticular screens have substrates on them to bond to the diffuser).

Therefore, it would have been obvious at the time of the invention to modify the invention of Ritchey with that of Ezzra. The advantage would have been to increase that separation of the 2D views at the observer and a reasonable angular spread is obtained (Col 4 Ln 26-30).

9. Claims 28 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Ritchey (US 5,495,576) in view of Nayar et al (US 2004/0070565).

As per claim 28, Ritchey discloses the system of claim 1, in which the plurality of cameras (Fig 17, 6a-6f; Col 10 Ln 1-9 and Col 26 Ln 62-66).

However, Ritchey does not teach in which the plurality of cameras acquire high-dynamic range videos.

In the same field of endeavor, Nayar et al teach in which the plurality of cameras (Fig 24, 502) acquire high-dynamic range videos (paragraph [0124]).

Therefore, it would have obvious for one having ordinary skill in the art at the of the invention to modify Ritchey with Nayar et al. It is advantageous to use Nayar et al to overcome resolution limitations (paragraph [0124] Ln 8-11).

As per claim 29, Ritchey discloses the system of claim 1.

However, Ritchey does not teach in which the display units display high-dynamic range images of the output videos.

In the same field of endeavor, Nayar et al teach in which the display units (Fig 32, 506) display high-dynamic range images of the output videos (paragraph [0124] and [128]; the reference discloses high-dynamic range video for a camera and the display would have to be high-dynamic also to display the images from the camera).

Therefore, it would have obvious for one having ordinary skill in the art at the of the invention to modify Ritchey with Nayar et al. It is advantageous to use Nayar et al to overcome resolution limitations (paragraph [0124] Ln 8-11).

### ***Conclusion***

Application/Control Number:  
10/783,542  
Art Unit: 2621

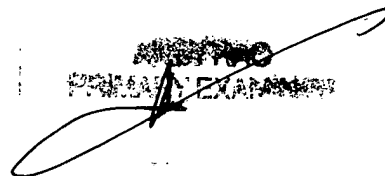
Page 11

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chikaodili E. Anyikire whose telephone number is (571) 270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CEA

A handwritten signature in black ink is written over a rectangular stamp. The stamp contains the text "EXAMINER" and "10/783,542" in a bold, sans-serif font. The signature is a cursive-style name that appears to be "Chikaodili E. Anyikire".